AIAA Space and Astronautics Forum and Exposition, SPACE 2016, 2016

Observation of stars from the lunar surface: Estimation inaccuracy of the physical libration parameters in dependence on errors of stellar coordinates in stellar catalogues

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Abstract

© 2016, American Institute of Aeronautics and Astronautics Inc, AIAA. All rights reserved.One of the future exploration of the Moon is the Japanese space experiment ILOM, a component of the next stage of SELENE mission. The task of the ILOM is to place on the lunar pole the optical telescope and the observations of stars to determine the characteristics of the lunar rotation with accuracy of 1 millisecond of arc. The paper presents results of simulating of the planned observations from the lunar surface in frame of the ILOM. The errors in calculation of libration angles which may arise due to errors in the coordinates taken from the stellar catalogues are investigated. It’s shown, that the error of coordinates from the stellar catalogs, as a source of additional errors in the determination of the physical libration angles, may be not taken into account due to their small effect.